

INGENUITY OF ANIMALS WE KNOW LITTLE ABOUT

So much has been written of late about animals that never existed, much less than were ever known, that painstaking naturalists are moved to wonder why certain romances stray so far in fancy when the facts are so much more extraordinary.

Take as common examples, the ants and spiders. They are probably the oldest civilized races on earth, and how much does the average person know about them? Ages before the first man drew breath the ants were building their skyscrapers of clay, digging their slaves, milking their cows, and making war on their hostile neighbors; while the spiders were weaving marvelous tapestries, sailing in aeroplanes (which we might imitate with profit, building ingenious sailing ladders), and otherwise winning their way as master craftsmen of the world. They and the ants were the first, and they may be the last. Already over the graves of countless forgotten nations they are respectively rearing their walls, weaving their fabrics, and tirelessly pushing on with their engineering enterprises as when the earth was young.

We speak of the spider as she, because the family is mostly feminine, the male appearing to take no part in designing, constructing, or decorating the dwelling, and is seldom found inhabiting it even as the temporary guest of his mate. One will rarely find the sexes associating at all—it is not in the nature of the female to dwell in harmony with her mate, and should he be bold enough to make tender advances his reception is often extremely discouraging. In fact, courtship for him is fraught with considerable danger. The female has to be approached with the utmost circumspection, and even when, after much patient wooing, she appears to be in a merry mood and like enough to consent, he must still be alert and distrustful, for the exact fair one has been known to prefer, on sudden impulse, a headless mate, and eventually to devour him.

The Spider's Door.

When the spider builds her home, the lining or wainscoting is continuous with the frame of the door, of which it also forms the hinge; indeed, the door may be regarded simply as a bit of the wall attaches the floor by ties at a number of points round the edges to the margin of the sill. Thus it is woven on a frame, just as medieval tapestry was wrought on a frame, and the ties are afterward severed, the spider biting through them until the edges of the door are free everywhere except at the hinge. One species builds a spurlike projection outside and above the hinge. This is supposed to be a device by means of which the spider can open her door conveniently when returning home from a foray for food.

The doors are of two styles of architecture, quite distinct and of startling dissimilarity. Those made by spiders abundant in Southern Europe and in the West Indies are light as of flaky silk and are much larger than the opening or doorway. The other and commoner style is thick and heavy, though beautifully beveled round the edge and made to fit tight into the mouth of the tube, which is similarly beveled to receive it—just as a cork fits into the neck of a wide mouthed bottle. No surprise need be occasioned by this care to have a snug fitting door; for no animal has more dangerous and persistent enemies than the spider, certain minute insects going so far as to lay their eggs inside the eggs of spiders whenever they can. As a result, the workmanship with which the doors are constructed is amazing; when closed, they are exactly flush with the surface of the ground; they fit so neatly that they are always difficult to detect, and so tightly that one must be a skilled house-breaker to open and close them successfully when the owner is away.

Wind is another arch enemy of the spider, which in rough weather displays the same intelligence in anchoring her web that a sailor does his ship. For instance, the poor spider sees, or feels, her home threatened with destruction. As she can neither control nor temper the wind, nor feel safe, the only course is to steady the web by weighting it with something. I have never observed a spider actually doing this, but cases are recorded in which they have hoisted pieces of wood, many times their own weight, on the end of a silken cord and attached them to the web, on the same principle as a sailor casts anchor in a squall.

I have mentioned their sailing ladders. What a piece of rope was to the sailor before the days of steamships, its silken thread is to the spider.

er; there are few practical problems baffling to the spider with this aid. How, for instance, can a spider escape when placed at the bottom of a clean dry goblet? The answer is that with its spinner it cannot only make a rope wherewith to descend from above, but also a scaling ladder. Standing on its front legs, the spider raises the rear end of the body as far as possible against the scalable surface and attaches thereto a few strands of silk. Given this foothold, the spider mounts, adds another rung, and is soon at liberty.

And the aeroplane? The young of many species of spider practise aerobatics. As a preparatory measure they always appear to consider carefully which way the wind is blowing and, turning their breast toward the quarter from which it comes, they stand on tip-toe and raise the body. Suddenly they will dart four or five threads from their spinners in radiating lines like films of silk blown by the wind. They may be more than a yard in length and diverge in an ascending direction. The spider then quickly lets go its sole of any elevated object where it may be perched, and is quickly borne from view. Its threads are so woven as to be buoyant, and the air current does the rest. One great naturalist has stated that the aeromantic spider can propel its thread in any direction, either in stationary air or in a breeze, and that electricity is the one and only reason for explanation. But it would be worthwhile to analyze fully such a perplexing conundrum; though equal perplexity is inspired by the common water spider, a dull looking brown and olive creature which makes a remarkable submarine structure best compared to a diving bell.

This bell, so to say, is woven entirely of silk, the threads crossing one another in multiple directions and forming a strong but delicate and water-tight structure. The door is filled with air which, chiding through the white silken walls, gives it a beautiful silvery semi-transparency. In this curious abode the spider dwells. Shifted with sudden hunger, she will abandon her retreat so adroitly that the bell remains water-tight. She then secures the water for insects which she either devours on the surface or else after returning home, but how is the bell kept airtight with air? Whenever the supply becomes exhausted the spider carries down a small bubble of air from the surface and deftly releases it under the web. Some think that the air becomes so foisted in the dry, hairy coat, others that the rear legs have something to do with holding the bubble until it is deposited in the bell.

Had Robinson Crusoe or Baron Munchausen hazarded his reputation for veracity by speaking of an island where one might encounter a species of giant crab busily occupied in digging holes in the earth, while others were climbing trees and still others gathering coconuts, the hearer might well have been incredulous. Yet there are such crabs, whole armies

and empires of them; which, incidentally, may be the reason why Crusoe and Munchausen did not tell the story.

At any rate, the great robber crab, whose habitat is the South Pacific, is a creature of prodigious strength which scales trees almost with squirrel-like agility, and cracks coconuts preparatory to conveying the milk to its self-built earthen den. The crab, feeling dinner time approaching, begins by tearing the outer jacket, fiber by fiber, from the nut. Having weakened the shell sufficiently near the three eye-holes, the vanguard begins hammering one of the eye-holes with a heavy claw until an opening is made. Then, turning its body and tilting the nut slightly, the opening being on top, and at the same time placing a roomy pouch underneath, the crab will slowly drain the nut of its milk. This is one of the most remarkable cases of animal instinct on record, and is vouched for by no less an authority than Darwin.

Up to Date Summer Houses.

Returning to our own country and its animal artists and artisans, have you ever watched the thrush or the homely blackbird working up material for a summer house? Mixing pieces of grass or other tendrils with the mud, just as a bricklayer mixes hair with his mortar to make it bind better, and afterward drying the composition with the warmth of their body, they succeed in creating a cup both tidy and strong. This cup is surrounded by a thick coating of grass

roots, and similar material. Consider what an ideal incubator this is; the impervious lining, through which neither wind nor rain can penetrate, the stout, closely woven wrapper which keeps the interior warm,—could anything be better? Nothing is missing, except a radiator of some sort and a lid, to make this a perfect incubator. And the parent bird supplies these with her own body.

Marvels of the Ant World.

And now we come to those tiny people, as alien to other insects as though they abode on different planets,—creatures to whom there is no sun, no day, no night, no speech, and no hearing,—the ants. Working forever on an earth of silence and midnight, is it remarkable that, until quite recently, human beings were comparatively ignorant of those highly developed artists and craftsmen? This article may inform you for the first time of some surprising discoveries made of late in the ant world. As with the spiders, generally speaking, the ants are a nation of unwarmed females, for a vast majority of whom existence is as an Adamless Eden.

Watch the doorways of an ant village at eventide, and you will be astonished at the mighty bustle and confusion, for that is what seems to reign. Yet watch them closer, and you will note them barricading their doors against the night. Back and forth, up and down, they hurry, tearing little pieces of wood, placing the largest pieces at the bottom and the

smallest at the top. Then they will bring quantities of dry leaves and other similar material with which a roof covering may be made. Is not this, on a microscopic scale, the art of our builders when they roof over a building? Nature seems everywhere to have anticipated the inventions of which we boast, and this is one of the most simple.

Any encyclopaedia will tell you that the ant, in proportion to its size, is the strongest of all creatures; but, until Miss Adele M. Field made her remarkable experiments in New York, it was not known how the ants see without eyes and hear without ears. Her discoveries make the ant tenfold more wonderful than anybody ever imagined.

Projecting from the head of every ant are two tiny horns that are continually being waved in the air. They each have at the end from four to a dozen joints, and every joint is a nose. One nose detects the odor of the home, another of a relative, another of a close friend or ally, still another detects an enemy, and so on. Each ant inherits a peculiar and distinct odor, or rather each family does, and this is a substitute for color and outline. As for the second sense,—hearing,—without ears,—Miss Field found, by placing an ant nest near a piano and playing thereon, that the creatures absolutely ignored the sound; but when the nest was placed on the piano, presto! it was as though an insect Pan had appeared or a tiny Minnie had tossed a bomb amid the colony. By following this line of experiment the amazing fact was soon established that ants hear with their feet—the most sensitive feet in the world.

Among many other interesting revelations it appears that our own brown ants are not only the most industrious, but the most artistic and masterly architects of the nation, so to say. This ant forms its home in stories rather less than half an inch in height. On examining each story separately, the investigator saw a number of carefully designed cavities or halls, lodges of narrower dimensions, and long corridors which served for general communication. The arched ceilings covering the most spacious areas were supported either by small columns, slender walls, or regular buttresses. Ant houses frequently contain forty stories; half above the earth surface and half below; an arrangement which enables the ants to regulate the temperature to a nicety and with the greatest ease.

Recent attention has also been paid to the enigmatic parasitic ants, which are known to us well known—in the Tropics, because of their destructive habit of clipping pieces out of the leaves of trees and carrying them away to their nests. But they have a higher industry, builds which even houses building and harvesting are commonplace; that of making mushroom beds and cultivating mushroom rooms such as fill a very important place on their bill of fare. Their appearance when working is very striking. They move over the ground in broad columns, which promptly and paradoxically suggest the scene in Macbeth where Birnam Wood moves on Dunsinane, for every ant bears in its jaws a piece of leaf; and the irregular, swaying, streaming movement of a myriad green banners borne onward by the hurrying cohorts is an astonishing spectacle.

Potters and Paper Makers.

Provoking almost equal astonishment, however, are many animal potters, paper manufacturers, tailors, and cigar makers. One may well appear incredulous at these designations. But suppose we visit an Agave pottery wherein work fragile creatures no larger than a common grasshopper and unpretentious like so many good workmen; yet so skillful in their craft are the Agaveas that they are surpassed by few, if any, workers in clay. The pots they fashion are delicate and symmetrical. Like the pieces of a tiny china set, Agavea punctum fashions tiny earthenware, while Agavea hyalipennis shapes its ware in the form of a primitive drinking cup. But it is not alone in the graceful curves of their fragile vessels that these potters display their genius but in glazing. The inner as well as the outer surface is carefully tooled, and the vessel is made thoroughly water-tight. This glazing is done by spreading the waterproofing material in a thin film over the inside of the vessel, just as our common earthenware is glazed inside while the outer surface is left in its original crudity. And the purpose of these pots appears to be solely

to catch and contain water for drinking in periods of drought.

Paper making has been spoken of. The insects denominated generally as wasps carried on this industry long before it was invented by man, and the paper they produce will bear comparison in many respects with our own weaves; for they know equally well how to make blotting paper and that which is rendered tougher and less porous by means of size. When so placed as to be sheltered from the rain, their paper is simply composed of wood fiber reduced to pulp. On the other hand, where it is subject to exposure the wasps cover it with a protective varnish, or, in other words, give it a coat of size. This paper will carry ink, and is superior to many of our own papers in that it sheds, instead of absorbing, water. Indeed, so many wasp families practise this industry that they have raised it to the level of a national art. But they have no monopoly, as it is carried on also by the termites, or white ants, common in South Africa and other parts of the globe.

Caterpillar Tailors.

Among the animal clothiers are the smooth caterpillars. Naked and unarmed, their extreme vulnerability places them at the mercy of numerous enemies; but many families of them are remarkable for making little sheaths of garments for the protection of their bodies, notably the silkworm, than whom the lilies of the field are not more gorgeously arrayed. Ordinary globular caterpillars, such as are native to our country, however, show a ready adaptability to the circumstances surrounding them and utilize whatever material there may be at hand. Thus the leaf dwellers garb themselves like wood piles in leafy apparel; those which camp on our old oaks rob Peter to pay Paul, as the saying is, and warm themselves in snug woolen wrappers; while those born to the ornate luxuries in robes of fur. The strange clothes of all, however, are several larvae or caddis flies whose garments are composed of shells, often with the living occupants still inside. Fastening a number of these round the body, the larvae drag them about at pleasure, and, as Reamur remarks, it is a covering as singular as though a savage, instead of clothing himself with skins, should make a garment of living minks or other small animals.

As we have seen, the ants and crafts of animals are nearly always directed toward providing shelter or protection for themselves or their progeny, storing food, or capturing prey; just as with the primitive races of the earth, and as is still the case with some savage people today. But the interesting observation remains that our dull vision when sharpened to a keener sense may learn many valuable lessons from the lower animals, not only in the arts and crafts, but in economy, industry, government and other premier virtues of which man boasts himself as the supreme possessor.—William Griffith in New York Tribune.

Squirrels' Expensive Nest.

Ernest Thompson Seton has written about animals who obey some of the ten commandments. "Thou shalt not steal!" is unknown to the colony of red squirrels which occupies the attic of Charles Edmund's farm house, near Hanover, N. J. The squirrels got in the attic from the crevices that brush the eaves and through a knot hole in a weather-board.

The money stringency alarmed Edmund a few weeks ago, and he drew thirty \$20 bills from a New York bank. He put the money in a small pasteboard box and, without telling his wife and daughter, hid the box on the plates under the rafters of the attic. Becoming convinced that the financial crisis had passed, Edmund went for the money yesterday to put it back in the bank.

He found only small fragments of the banknotes and the box. The squirrels had knawed them to pieces to build a nest, of course. Edmund cannot find the nest and he is almost mad enough to demolish his house to wreak vengeance on the squirrels. He vowed yesterday that he will try to kill every squirrel he sees.—New York World.

Consistency.

He—Why don't you women who are always talking about early Christmas shopping, and sparing the poor clerks, practice what you preach, and do your own shopping?

She—What! And miss all the best bargains?—Baltimore American.

